DOCUMENT RESUME

ED 073 609 EC 051 420

TITLE	Project LIFE--Language Improvement to Facilitate Education: A Multimedia Instructional System for the Deaf Child.
INSTITUTION	National Education Association, Washington, D.C.
SPONS AGENCY	Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C.
PUB DATE	[72]
NOTE	20p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Aurally Handicapped; Curriculum Design; Curriculum Development; Curriculum Evaluation; *Exceptional Child Education; Films; Filmstrips; Instructional Materials; *Language Handicapped; Language Instruction; Learning Disabilities; Program Design; Program Development; *Programed Instruction; *Programed Materials; Reading Readiness
IDENTIFIERS	Language Improvement to Facilitate Education; Project LIFE

ABSTRACT

Explained are the program development, evaluation, validation, and dissemination procedures of Project LIFE (Language Improvement to Facilitate Education), a series of programed instructional materials for language handicapped children, especially hearing impaired children. Project LIFE is said to employ a series of visual perceptual filmstrips and a thinking activities series to teach the pre-skills necessary for a child to experience success in the language/reading program. The language/reading program is designed to teach vocabulary, sentence structure, and more sophisticated language structures in units focusing on general topical themes (self, animals, food, playthings, activities, clothing, shelter, history, travel, and pollution control). All instructional areas of the LIFE system are said to be accompanied by stated purposes and behavioral objectives, and to provide the conceptual base and framework on which the major pedagogic concepts for subsequent lessons are based. Programed filmstrips in visual perception, thinking activities, and language/reading are identified as the core program components, while supplemental components are said to include software such as story booklets, single concept flash cards, picture dictionaries, transparencies, and teacher guides. It is explained that evaluation and validation data are drawn from 52 field test centers each academic year, and that the program is disseminated by a commercial distributor. (GW)

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PROJECT LIFE--LANGUAGE IMPROVEMENT TO FACILITATE EDUCATION: A MULTIMEDIA INSTRUCTIONAL SYSTEM FOR THE DEAF CHILD

Language, in its most pedestrian sense, is an acquired cultural tool that facilitates the communication of man's personal expressions. Notions of somewhat lesser currency view language as facilitating thought patterns by instilling an element of verbal structure into the cognitive processes. Whatever the notion subscribed to may be, language is in its final analysis a covariable to the acculturation process. Although there exist many other social, emotional and psychological factors contributing to this process, language, it appears, is the single most pervasive factor.

Critical to the development of the language process is the socially functioning sense of hearing. Whenever a handicapping condition such as severe auditory deprivation exists from early childhood, a pronounced retardation in the child's acquisition of expressive/receptive language abilities invariably results. This identification of one of the focal tragedies of deafness lends support for the truism that no responsible teacher of the hearing impaired child exists who is not at the same time a practitioner of the art of teaching grammar and meaning. The expressed need and challenge to be met by these teachers is (1) to increase the child's reading level so that it approximates more closely the level expected of the child's chronological age, and (2) to measurably improve the written language

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production of the child so that even the near limits of grammatical acceptability might hopefully be attained. That these hopes have not been realized for the majority of such hearing impaired children is supported by the relative profusion of comparative, cross-sectional and longitudinal research studies conducted over the past several decades on this topic of language deviance in this population of handicapped children.

Congressman Hugh L. Carey, addressing the 1967 National Conference on the Education of the Deaf, again pointed up this need when he stated, "It seems obvious that something should be done to determine if language can be assimilated through the utilization of the deaf child's other senses" (Education of the Deaf, 1967). Concomitant recommendations presented at the same Conference by members of the National Advisory Committee on Education of the Deaf (1967) were: (a) "The relationship between language input and language output should be studied more thoroughly . . . by exploring the roles of the other senses"; (b) ". . . research should be supported that investigates thinking in deaf children . . . so that educational techniques, stimulating the intellectual functioning of deaf children, be evaluated."

Because of the known need, Project LIFE -- Language Improvement to Facilitate Education -- was created. Under the sponsorship of Media Services and Captioned Films (Contract No. OEC-0-73-0608), Bureau of Education for the Handicapped, U.S. Office of Education, Project LIFE is administered by the National Foundation for the Improvement of Education (NFIE) and located at the National Education Association's headquarters in Washington, D.C. NFIE, the recently formed non-

profit foundation of the National Education Association, administers contractual projects engaged in the development, testing, and applied validation of educational media programs.

Since the Project's original funding in 1963, it has produced 30 programmed filmstrips in visual perception, 102 filmstrips in thinking activities, and over 250 filmstrips in programmed language/reading. All such materials are aimed at improving the receptive language skills of hearing impaired children. LIFE has projected for development over the next 24 - 48 months (a) an additional 200 filmstrips of programmed language, (b) specific subject-matter programs in language arts, science and social studies, (c) a teaching manual outlining content, scope, recommended utilization procedures, and alternate utilization procedures, and (d) numerous workbooks, story booklets, flash cards, spirit-master manuals, single concept dictionaries, and other instructional materials to supplement the programmed filmstrips.

The dominating and long-range objective of the Project is to foster the growth of receptive language abilities in hearing impaired children so that their reading achievement surpasses the presently acknowledged "fourth grade plateau" at the secondary school level. Of lesser priority, but of substantial concern to the Project, is the intermediate objective of determining the effectiveness of these materials on children with handicaps other than hearing impairment.

Program Content

Project LIFE, on the basis of its early field testing evaluations, quickly realized that the development of language programs alone would be inadequate for

the full realization of the Project's goals. Consequently, a series of visual perceptual filmstrips were developed to teach the pre-skills necessary in order for the child to experience success in the language programs. This effort further resulted in incorporating within the system a thinking activity series, as based on the works of Guilford (1966) and Meeker (1969), and paralleling the cognitive and behavioral demands subsumed in the language programs.

One's reading ability is closely related to perceptual deficiency (Coleman, 1953; Bryant, 1964; Wepman, 1962; Shea, 1968); and, perceptual efficiency is developed through perceptual experience (Tinker, 1965; Cleland, 1966). Therefore, one goal of a reading based language program must be perceptual development. The teaching of visual perception is not an isolated process. On the contrary, there is an interdependence on language and cognition (Piaget, 1952; Harrington, 1964; Robertson, 1967; Frostig, 1968). Hence, perceptual training and thinking activity programs should be incorporated into an instructional language program, if it is truly to be considered a complete system.

The LIFE visual perception series is based upon more than 100 references (Pfau, 1972) related to perceptual development and reading disabilities. The structure of the perceptual process is dichotomized into two tasks -- discrimination and association. Each task area is divided into five skill areas: (1) visual properties -- size, shape, and color; (2) additions-omissions; (3) position in space -- inversions and reversals; (4) spatial relations -- distance and placement; and (5) figure-ground. Each filmstrip emphasizes only one task and one skill area. Within each filmstrip, a child is progressively taken through the concepts of pictures, geometric forms,

word configurations, letters, and words. In the discrimination task, the child chooses the one item from four which is different from the other three. In the association task, the child must choose the one picture from four choices which is identical to a given stimulus visual.

A great deal has been written about human intellect, and the manner in which children think and learn. Possibly, the most complete model has been postulated by J. P. Guilford -- The Nature of Human Intelligence (1967). After careful consideration of various models, Project LIFE selected the Guilford model as most appropriate on which to build a framework for cognitive material development. The model includes three basic areas -- operation, products, and content. The operation area is subdivided into evaluation, memory, cognition, convergent production, and divergent production. The products area includes units, classes, relations, systems, transformations, and implications. The content area is divided into figural, symbolic, semantic, and behavioral categories. The 102 Project LIFE thinking activity filmstrips are concerned with given specific cells in the three-dimensional factor-analytic Structure of Intelligence (SOI) cube (Meeker, 1969).

The core of the LIFE instructional system is programmed language-reading lessons. The primary goal for each child is the acquisition of a functional receptive language system. Beginning programs are built around basic vocabulary and sentence structures that the child needs. The language filmstrips are organized into hierarchical sets, progressing from simple to complex. An ever expanding functional vocabulary is programmed in a linguistic milieu, beginning with very simple sentence patterns and spiraling upward to include more sophisticated language structures. The language

units focus on a general topical theme, with the first units being self, animals, food, play things, activities, clothing, and shelter. The theme of later units include history, travel, and pollution control. The sequential and developmental hierarchy is provided in Figure 1.

Program Continuity

Though the Project LIFE instructional system may be used in a remedial manner, it is primarily designed as a developmental program. As indicated in Figure 1, the developmental sequencing begins with the visual perceptual training materials and progresses through the first half of the thinking activity series and then into the beginning language materials. Each filmstrip provides the conceptual base and framework on which the major pedagogic concepts for subsequent filmstrips are based. Similarly, each set provides the conceptual framework for those sets in the system which follow.

All instructional areas of the LIFE system are designed and developed with stated purposes and behavioral objectives. A test filmstrip, provided with each set, is designed to measure the degree to which the behavioral objectives are met. The test can be used as a pretest (diagnostic), post-test, or for review purposes. If used as a pretest, it allows the student to by-pass information already in his repertoire.

The programmed language/reading series has eight sets in Level I, or a total of 55 filmstrips. Levels II and III (Sets 9-24) have 59 filmstrips each, comprising a total of 16 sets. Every language set also has a story ("fun") supplement that

PROJECT LIFE INSTRUCTIONAL PROGRAM

Developmental Structure of the Media Components

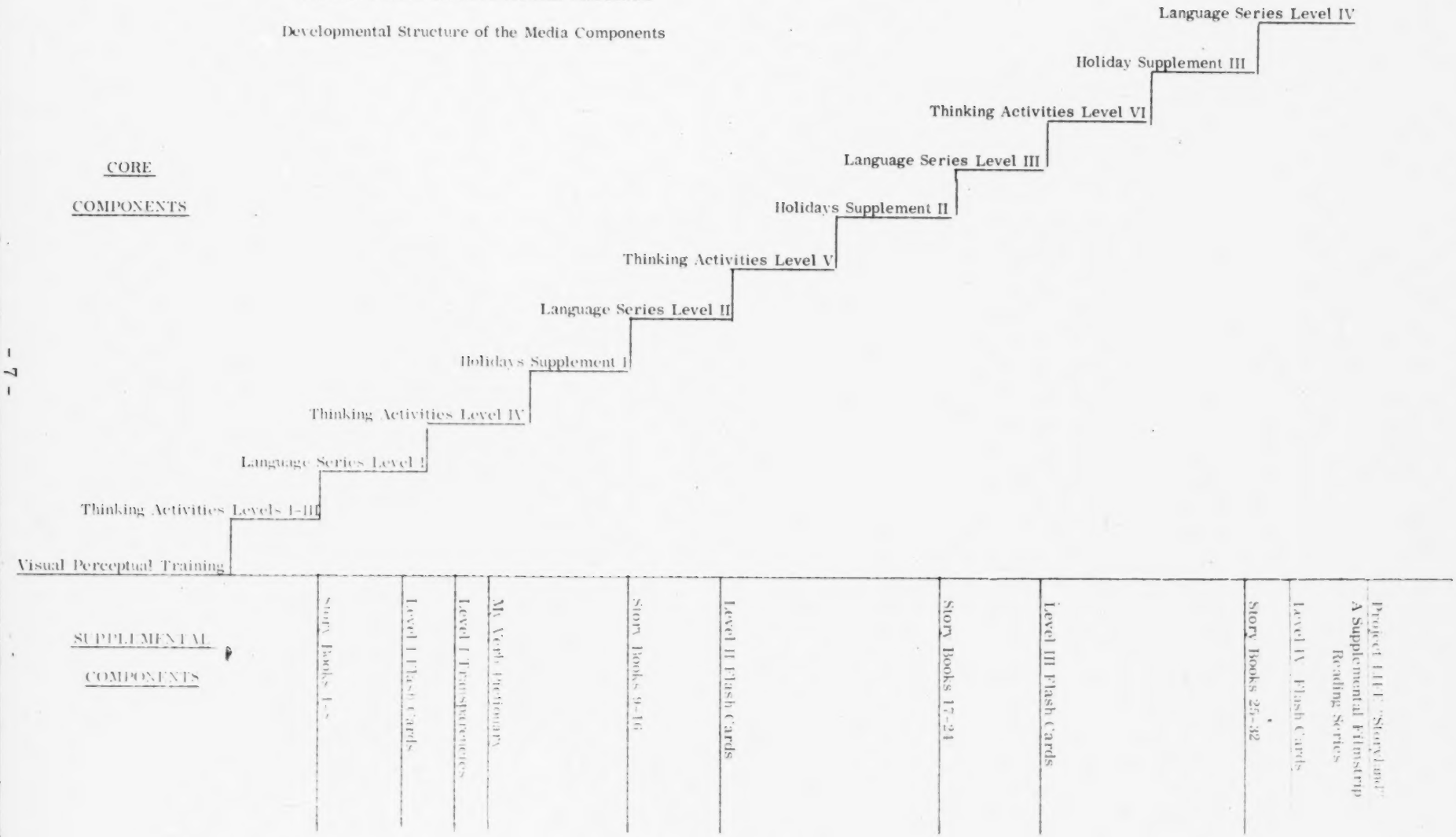


Figure 1

reinforces and extends the language and linguistic concepts in that particular set in an enjoyable story sequence.

It is difficult to pictorially illustrate varying levels of language complexity by individual frames. However, an attempt is made to do so in Figures 2-4. Figure 2 is selected from an elementary language filmstrip, Figure 3 from an intermediate level, and Figure 4 from a more advanced level. Though it may not be readily apparent in the three figures, the illustrations become more sophisticated, as do the vocabulary and language structure.

Program Supplementation

As indicated in Figure 1, the Project LIFE instructional program has "core" components and "supplemental" components. The core components are comprised of programmed filmstrips in visual perception, thinking activities, and language/reading. Supplemental components includes all other software developed by Project LIFE to complement, reinforce, or extend the instructional concepts presented in the core program.

Surveys and site visits are frequently made to the scores of institutions that are using the LIFE system to determine what supplemental components the teachers desire. The Project Research Department looks for trends or groupings in the teachers' requests. These requests are assessed and conveyed to the Project Systems Development Department. The latter Department designs, develops, tests, and modifies said requests for later inclusion into the LIFE system. Some of the

The boy and the girl are walking.

_____ is running.

Their dog □

They dog ✚

They ○

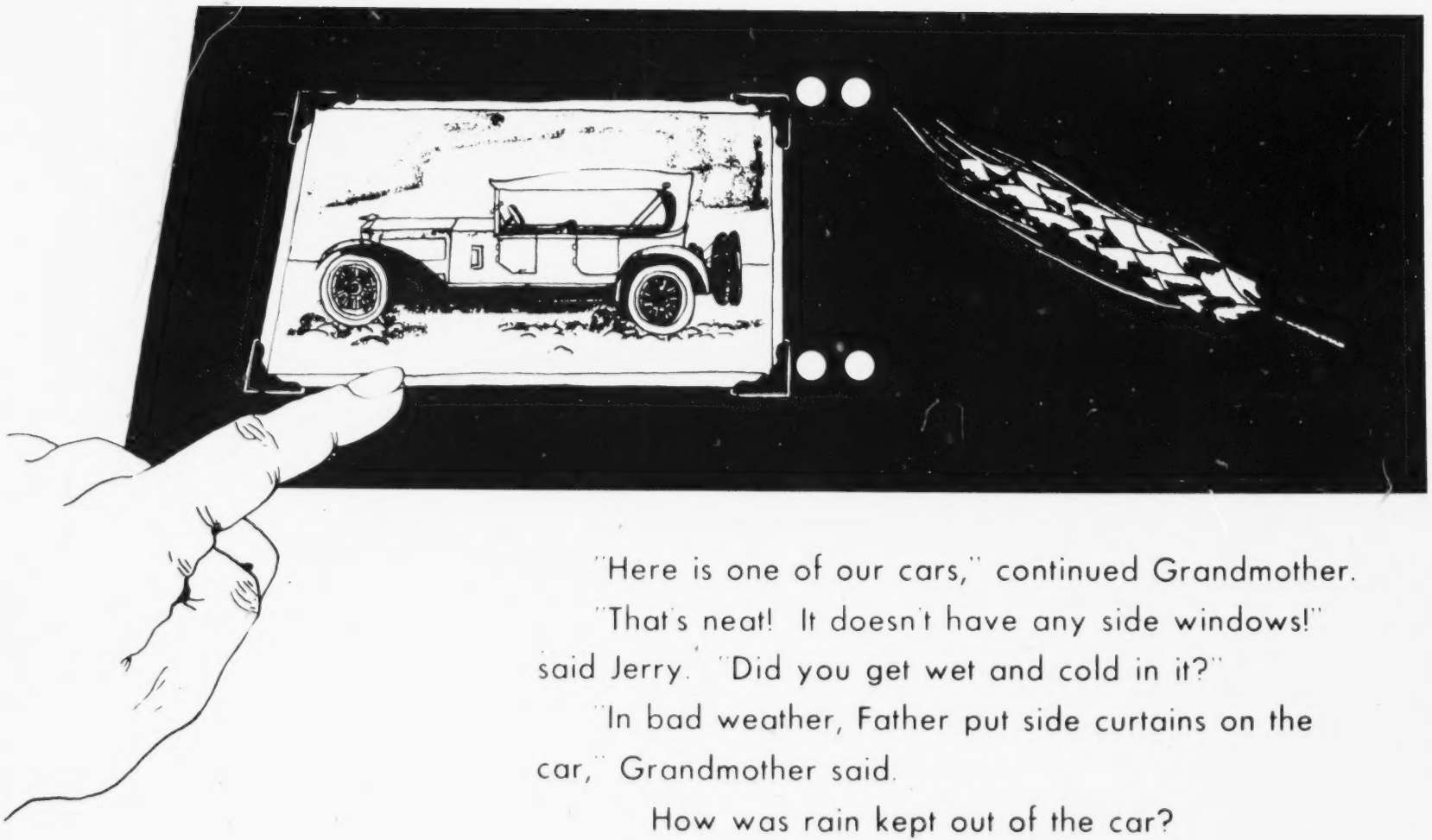
Figure 2

Miss Afghan said, "_____."

Cut out your picture ✚

Cutting out your picture ○

Figure 3



"Here is one of our cars," continued Grandmother.

"That's neat! It doesn't have any side windows!" said Jerry. "Did you get wet and cold in it?"

"In bad weather, Father put side curtains on the car," Grandmother said.

How was rain kept out of the car?

With umbrellas □

With side windows ✣

With side curtains ○

Figure 4

supplemental components under development at the time of this writing include:

1. Story booklets (24) to accompany the first three levels of language/reading (one story booklet for each of the first 24 language/reading sets);
2. Single concept flash cards (375) to accompany the first three language levels;
3. A series of picture dictionaries organized by concepts to assist the child in finding verbal labels for known concepts. The first such dictionary is called My Verb Pictionary; other books projected for these series will relate to multiple meanings, people, animals, nature, homes, community and occupations;
4. Transparencies for language Level I;
5. Project LIFE "Storyland" -- a supplemental filmstrip reading series. The series includes 24 filmstrips at the third - fourth grade reading level and includes accompanying worksheets;
6. A "language stimulation and divergent thinking series," which includes filmstrips, slides, and story booklets;
7. Spirit-master manuals; and
8. A comprehensive and functional teachers guide for use in conjunction with the Project LIFE system.

Program Evaluation and Validation

Project LIFE has approximately 150 units of hardware instrumentation (Student Response Program Masters) and no fewer than 40,000 units of software

materials distributed among 52 functionally participating field test centers. The geographical dispersion of these centers comprises 26 federal states, territories, the District of Columbia, and a Canadian Province.

Based upon the return of a recent demographical questionnaire, it is factually known that the field test centers are housed in schools servicing slightly less than one-quarter of a million handicapped children. Of this handicapped population base, sixty-eight percent (68%) received direct instructional exposure to the Project LIFE system. The dominant handicapping condition of the children in the 52 schools is hearing impairment (82%). Eight percent of the additional cases are multi-handicapped and the remaining ten percent are distributed somewhat unevenly over the disabilities of the emotionally disturbed, mentally retarded, and learning disabled with less than one percent being used with orthopedic and neurologically impaired children. Approximately 92% of all subjects using the LIFE materials are at or below the upper elementary school grade level with 48% of the teachers reporting that the programmed packages constitute the core of their classroom instruction while 32% use the LIFE system primarily as supplemental instruction to their basic curriculum, or for remediation of specific academic deficiencies.

During each academic year, the LIFE Research Department accumulates validation data from the responses of over 1,500 students. The data assists Project LIFE in answering the questions: "Do the individual LIFE instructional programs accomplish their specified behavioral objectives?" "Which programs are weak and should be modified in order to accomplish their stated objectives?" "What content

areas are weakest and in need of additional instructional supplementation?"

Figure 5 shows the flow of material development and return data to the LIFE Research Department. It may be noted that the Research Department is responsible for assessing the needs, determining the appropriate content areas to satisfy said needs and, finally, to modify the instructional components until they meet acceptable performance criterion levels. Figure 5 illustrates that data is returned to the Research Department from four sources -- developmental testing, validation testing, the commercial distributor, and the ultimate user.

The LIFE instructional materials are put through rigorous validation testing to gather data on the performance characteristics of the program as a whole. To the extent possible, validation testing is carried out on a population that is representative of the group for whom the program was intended. Since instructional materials are normally presented by the classroom teacher, the teacher (rather than the LIFE programmer) presents the program to the students just as if it were a normal part of academic instruction. Validation testing thus provides feedback under replicable conditions that demonstrate the program's inherent weaknesses and strengths. Some of the pertinent validation testing data include: (1) demographic data on each of the students involved, (2) indication of gain in students' achievement, (3) description of the instructional situation in which the program was used, and (4) time taken by the students to complete the program. Thorough validation testing goes far beyond the simple pretesting of the learners, giving them the program, and then post-testing the students. Though holding some credence, this is only one way to show that "the program did make a difference." For a more thorough review of

Project LIFE Diagram Showing Flow of Material Development and Return Data

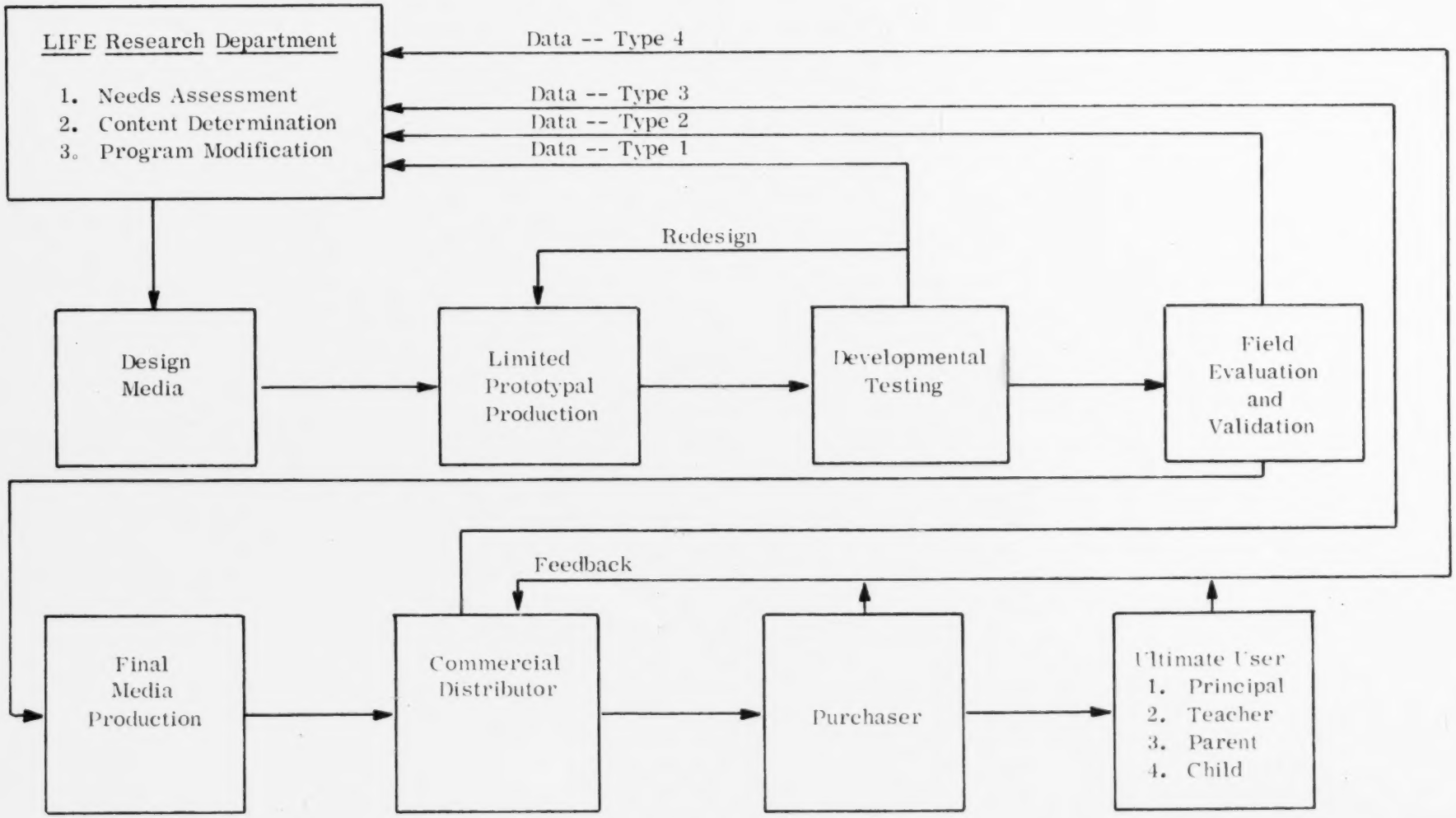


Figure 5

developmental and validation procedures, the reader is referred to earlier articles by the author (Pfau, 1969, 1970a, 1970b, 1970c, 1972a).

Program Dissemination

The National Foundation for the Improvement of Education and the U. S. Office of Education were faced with the crucial question of how to optimally disseminate the Project LIFE system. Some 15 dissemination alternatives were carefully analyzed and assessed. As a result of a study of the available alternatives and a marketing analysis, it was decided that the LIFE instructional system could best be disseminated by a commercial marketer.

On February 18, 1971, Project LIFE solicited proposals from prospective bidders to commercially distribute the LIFE system on an experimental basis to test the viability of the concept. The General Electric Company, through its Corporate Research and Development, was the successful bidder and, thus awarded exclusive distribution rights for a period beginning April 16, 1971 and extending through August 31, 1973.

On October 2, 1972, Project LIFE solicited proposals from publishers to commercially disseminate the LIFE system subsequent to September 1, 1973. Under the Copyright Program of the USOE, as set forth in its Copyright Guidelines dated May 9, 1970, Project LIFE was authorized to select a disseminator and enter into an agreement with that disseminator for the production, publication, and distribution of the LIFE materials. A total of 85 Requests for Proposals were sent out to perspective bidders by Project LIFE. The proposals submitted in response to

the RFP were carefully assessed by a special ad hoc advisory committee comprised of five members independent of Project LIFE, USOE, and/or any interested commercial disseminator. The General Electric Company was selected as the successful bidder to commercially disseminate the Project LIFE materials on a world-wide basis beginning September 1, 1973, and extending through December 31, 1979.

In return for the exclusive dissemination rights, the General Electric Company will return a royalty to the National Foundation for the Improvement of Education and to the U. S. Office of Education.

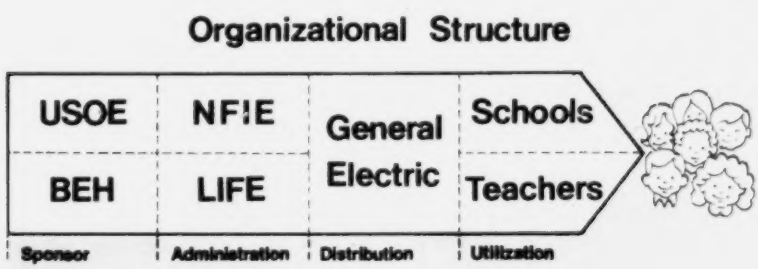


Figure 6

The organizational structure is shown in Figure 6. The primary strategy is the development of high interest instructional materials for language impaired children. It may be seen from Figure 6 that Project LIFE is sponsored by the

Bureau of Education for the Handicapped, USOE, is administered by the National Foundation for the Improvement of Education, and the materials are marketed by the General Electric Company. In essence, NFIE is the prime contractor to USOE for the development of the instructional system. NFIE in turn has an agreement with G.E. to disseminate both hardware and software. Though G.E. will continue to maintain the obligations associated with the NFIE agreement, it has entered into a subcontractor agreement with Instructional Industries, Inc., to carry out the major distribution aspects. For more information regarding the purchase or distribution of any aspect of the Project LIFE system -- either software or hardware -- the reader may write: General Electric/Project LIFE Program, Instructional Industries, Inc., Executive Park, Ballston Lake, New York 12019. Instructional Industries, Inc., is an independent affiliate of the General Electric Company.

The dissemination agreement between the National Foundation for the Improvement of Education and the General Electric Company recognizes the expertise of each organization. That is, NFIE and the Project LIFE organization will continue to produce high quality instructional materials and thoroughly validate them on a recognized sampling of different target populations. The General Electric Company has agreed to provide system planning, production and distribution of filmstrips, a variety of supportive materials, reliable equipment to display filmstrips, and a comprehensive program encompassing all aspects of marketing, service, evaluation and support. G.E. has further agreed to support the Project LIFE language program and to promote its use as a highly regarded, comprehensive, learning system for children, adolescents, and adults.

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